CHAPTER 19

DANGEROUS/HAZARDOUS CARGO AND MATERIALS

This chapter implements STANAG 2002.

Transporting dangerous/hazardous cargo is perhaps the most demanding job a military driver will ever perform. Much of the cargo that trucks move is dangerous, delicate, or unwieldly. It may be explosive, radioactive, sensitive to shock, or simply oversize or overweight. Rules covering these special cargoes are special themselves. Before dispatching a vehicle to the loading site, the truckmaster or operations officer ensures the driver is properly trained in the correct procedures to load, block, and brace the special or hazardous cargo.

Various forms are necessary for transporting special cargo. The driver must keep these forms safely on board the vehicle when transporting special cargo.

Although the driver need not fill out any of these forms, he must be familiar with their purpose and where he needs to sign them:

- DD Form 836 (Special Instructions for Motor Vehicle Drivers) (Figure 19-1).
- DD Form 626 (Motor Vehicle Inspection Report) (Figure 19-2).

GENERAL SAFETY MEASURES

Observe these safety measures when dealing with hazardous materials:

- Establish a safety program (AR 385-10) for loading, unloading and handling hazardous materials. Be sure each person involved in the operation is familiar with its contents.
- Provide qualified supervisors to direct and control the loading, unloading and handling of hazardous materials. Supervisors must thoroughly understand the hazards involved and will indoctrinate subordinates on special precautions and emergency situations that may arise.
- Designate specific segregated areas for container restowing activities, if available, and for in-transit storage purposes.
- Mark hazardous materials operating and storage areas with appropriate warning signs. (See Appendix B, extract of STANAG 2002.)
- When appropriate, initiate security measures to prevent theft, sabotage, and so forth.
- When handling explosives or flammable materials –
  - Prohibit smoking except in an established smoking area and provide facilities for safe disposal of smoking materials.
  - Prohibit matches, lighters, or other sparking or open-flame producing items in the hazardous area.
  - Prohibit footwear strengthened with nails or other spark-producing metal, unless the footwear is covered with rubber, leather, or other nonsparking material.
  - Establish fire fighting and other emergency plans and provide for fire fighting and other emergency equipment.
  - Avoid jars or shocks, particularly with sensitive explosives used in detonators. Subject nuclear weapons to minimum handling and minimum exposure to shock.
- Ensure that protective clothing and/or equipment is used during handling of toxic oxidizers, fuels, or chemical agents. This may include masks, goggles, gloves, or other garments. Suitable neutralizing agents should be available for personnel handling toxic gases, etiologic agents, and white phosphorus.

SPECIAL INSTRUCTIONS FOR MOTOR VEHICLE DRIVERS

DATE: 1 Feb 1991

TO: (Carrier's Name and Trailer Number)
Miller Motor Express

FROM: (Installation Issuing Instructions)
Fort Eustis, Virginia 23604

BILL OF LADING NUMBER
E-9, 879, 418

TYPE PLACARDS REQUIRED

THIS TRUCK IS LOADED WITH (Commodity description)
Rocket Ammunition with Empty Projectiles and Radiaactive Material N.V.S.

IN CASE OF FIRE

1. If any part of the vehicle outside of actual contents catches fire, take vehicle to a clear or uninhabited area, if practicable, and/or attempt to put fire out immediately with hand extinguishers or other available means. If practicable, ask someone to notify the fire department. Call to the attention of fire or police personnel at the scene of the fire the information on this form.
2. Fires may be fought until the flames reach the cargo, at which time firemen and other personnel should be withdrawn to a safe distance, as noted in 5 and 6 below.
3. If in convoy, other trucks proceed to safe distance.
4. Water may be used on this cargo ☑ Yes ☐ No *(See Other Specific Precautions or Instructions below)*
5. Firemen should not approach closer than 500 feet* from the fire when the fire has reached the cargo. *(See Other Specific Precautions or Instructions below)*
6. Public should not approach closer than 500 feet* from fire.
7. As soon as practical, notify the nearest military installation.

IN CASE OF ACCIDENT

1. Set brake and block vehicle to prevent movement.
2. Post flags by day, and red electric lanterns or reflectors by night, warning traffic approaching from each direction.
3. Call for ambulance, if necessary.
4. Notify nearest police.
5. Notify nearest military installation if cargo is damaged.

ADDITIONAL NOTIFICATION REQUIRED *(By phone or wire as soon as possible)*
Transportation Officer
Fort Eustis, VA 23604
877-4181 Ext 2235

IN CASE OF BREAKDOWN

1. Do not attempt to tow loaded vehicle.
2. Post flags by day and red electric lanterns by night, warning traffic from each direction.

GENERAL PRECAUTIONS

1. While operating over public roads, keep at least 300 feet from trucks loaded with explosives or other dangerous articles; a greater minimum distance must be maintained if required by state or municipal regulations.
2. Protect the public from the hazards of the cargo.
3. Do not allow smoking or use of matches or lighters in or near the vehicle.
4. Obey all state and local traffic regulations.
5. Do not exceed posted speed limits.
6. Stop at all railroad crossings
7. Use designated routes. Whenever possible avoid congested residential or business areas.
8. Do not permit unauthorized persons to ride on vehicles.
9. At other than carrier rest stops or interchange points, select safe parking space at stopping locations designated by the carrier. Vehicles carrying explosives should not group together at these stopping locations.

OTHER SPECIFIC PRECAUTIONS OR INSTRUCTIONS

Remain at least 1500 feet upwind of fire

SAMPLE

These instructions must be transferred to each subsequent driver for turn-in at final destination. If more than 3 drivers are involved, the additional signatures should be made on an extra sheet and attached hereto.

SIGNATURE OF SHIPPER REPRESENTATIVE
John C Williams

SIGNATURE OF FIRST DRIVER
Harvey A. Bain

SIGNATURE OF SECOND DRIVER

SIGNATURE OF THIRD DRIVER

* The distances shown are minimum; greater distances should be used whenever possible.

DD FORM 1 MAY 71 836 REPLACES ED TION OF 1 JUN 68, WHICH MAY BE USED.

GPO : 1987 O - 195-150

FIGURE 19-1. Example of DD Form 836.

NOTE: This is an extremely important form used whenever you have dangerous or hazardous cargo. Read it carefully before you sign it.

MOTOR VEHICLE INSPECTION
(TRANSPORTING HAZARDOUS MATERIAL)

GBL. NO.	ORIGIN	DESTINATION
NAME OF CARRIER	Miller Motor Express	
NAME OF DRIVER	Harvey A. Bain	
DATE AND HOUR	1 Feb 88 0800 Hrs.	
INSTALLATION/ACTIVITY	Ft. Eustis, VA.	
DRIVER'S STATE PERMIT NO.	246882145 VA.	
MEDICAL EXAMINER'S CERTIFICATE AND DATE		

VEHICLE

TYPE OF VEHICLE	TRUCK NUMBER / ORIGIN / DESTINATION	TRAILER/S NUMBER / ORIGIN / DESTINATION	SLEEPER CAB / VALID LEASE / I.C.C. NUMBER
☐ TRUCK ☐ TRUCK AND FULL TRAILER ☐ TRACTOR AND DOUBLE TRAILERS ☑ TRACTOR AND CLOSED SEMI-TRAILER ☐ TRACTOR AND FLAT-BED TRAILER	T-462-187 / /	27A-883 / /	☐ YES ☑ NO / ☑ YES ☐ NO / 3274 A

NOTE: All of the following items shall be checked on empty equipment prior to loading. Items with an asterisk(*) shall be checked on incoming loaded equipment.

ITEM NO.	CHECK APPROPRIATE COLUMN (See reverse side for explanatory notes)	ORIGIN SAT	ORIGIN UNSAT	DESTINATION SAT	DESTINATION UNSAT	REMARKS (Explain unsatisfactory items; use reverse side if necessary)
1.	ENGINE, BODY, CAB AND CHASSIS CLEAN	✓		✓		
2.	STEERING MECHANISM	✓		✓		
3.	HORN OPERATIVE	✓		✓		
4.	WINDSHIELD AND WIPERS	✓		✓		
5.	SPARE ELECTRIC FUSES AVAILABLE	✓		✓		
6.	REAR VIEW MIRRORS INSTALLED	✓		✓		
7.	HIGHWAY WARNING EQUIPMENT	✓		✓		
* 8.	FULL FIRE EXTINGUISHER INSTALLED	✓		✓		
9.	LIGHTS AND REFLECTORS OPERATIVE	✓		✓		
10.	EXHAUST SYSTEM	✓		✓		
* 11.	LIQUID PETROLEUM GAS POWERED VEHICLES	✓		✓		
* 12.	FUEL TANK, LINE AND INLET	✓		✓		
13.	COUPLING DEVICES - KINGPIN LOCK	✓		✓		
* 14.	ALL BRAKES OPERATIVE	✓		✓		
* 15.	LANDING GEAR ASSEMBLY OPERATIVE	✓		✓		
16.	SPRINGS AND ASSOCIATED PARTS	✓		✓		
* 17.	TIRES	✓		✓		
18.	CARGO SPACE	✓		✓		
* 19.	ELECTRIC WIRING	✓		✓		
* 20.	TAIL GATE AND DOORS SECURED	✓		✓		
* 21.	FIRE AND WATER RESISTANT TARPAULIN					
22.	ANY OTHER DEFECTS (Specify)					

SAMPLE

☐ APPROVED ☐ REJECTED *(If rejected give reasons on reverse under "Remarks". Equipment shall be approved if deficiencies are corrected prior to loading.)*

SIGNATURE (of Inspector) ORIGIN: John Coulter

SIGNATURE (of Inspector) DESTINATION: Thomas Smith

	ITEMS TO BE CHECKED PRIOR TO RELEASE OF LOADED VEHICLE	ORIGIN	DESTINATION
23.	MIXTURES OF MATERIAL PROHIBITED BY DOT REGS. ARE NOT LOADED ON TO THIS VEHICLE		
* 24.	LOAD IS SECURED TO PREVENT MOVEMENT		
25.	WEIGHT IS PROPERLY DISTRIBUTED AND VEHICLE IS NOT OVERWEIGHT		
* 26.	SEALS(S) APPLIED TO CLOSED VEHICLE, FIRE AND WATER RESISTANT TARPAULIN APPLIED ON OPEN VEHICLE		
* 27.	SPECIAL INSTRUCTIONS (DD Form 836) FURNISHED DRIVER		
* 28.	COPY OF VEHICLE INSPECTION (DD Form 626) FURNISHED DRIVER		
* 29.	PROPER PLACARDS APPLIED		
* 30.	SHIPMENT MADE UNDER DOT EXCEPTION 868		

SIGNATURE (of Inspector) ORIGIN: John Coulter

SIGNATURE (of Driver) ORIGIN: Harvey A Bain

SIGNATURE (of Inspector) DESTINATION: Thomas Smith

SIGNATURE (of Driver) DESTINATION: Harvey A. Bain

DD FORM 626 APR 78 — REPLACES EDITION OF 1 JUN 73, WHICH IS OBSOLETE.

FIGURE 19-2. Example of DD Form 626.

EXPLANATORY NOTES

REFERENCES IN ITALICS BELOW ARE THE APPLICABLE PORTIONS OF THE DOT MOTOR CARRIER SAFETY REGULATIONS (M.C.S.R.) AND THE CODE OF FEDERAL REGULATIONS (C.F.R.). DOD REQUIREMENTS ARE ESTABLISHED BY THE DEPARTMENT OF DEFENSE (DOD).

THE INSPECTOR MUST BE FAMILIAR WITH THE CITED PORTIONS OF THE SAFETY AND EXPLOSIVE REGULATIONS

MEDICAL EXAMINER'S CERTIFICATE — Certificate must not be over 24 months old. *(M.C.S.R.)*

Item 1, ENGINE, BODY, CAB, AND CHASSIS CLEAN (e.g., no excessive oil or grease) - Inspect to see that engine and compartment are clean, check cab to see that no excessive grease is on cab and cab floor is free of debris; check under cab and chassis for excessive grease. *(DOD Requirement)*

Item 2, STEERING MECHANISM — Inspect to see that steering mechanism is in good condition, in proper adjustment, correctly and securely mounted, and whether the steering gear case is leaking lubricant. Pay particular attention to the pitman arm and tie rod assembly to see that they are securely mounted and not bent out of normal shape. *(DOD Requirement)*

Item 3, HORN OPERATIVE — Inspect to see that horn is securely mounted and of sufficient volume to serve its purpose. *(M.C.S.R.)*

Item 4, WINDSHIELD AND WIPERS — Inspect to see that the windshields of the tractors are free from breaks, cracks or defects which would make operation of the vehicle unsafe, that the view of the driver is not obscured by stickers, that wipers operate properly, and that wiper blades are of proper kind and in good condition. Defroster operative when conditions require it. *(M.C.S.R.)*

Item 5, SPARE ELECTRIC FUSES AVAILABLE — Check to see that at least one spare fuse for each kind and type of installed fuse is carried on vehicle as a spare, or it is equipped with an overload protective device (circuit breaker) *(M.C.S.R.)*

Item 6, REAR VIEW MIRRORS INSTALLED — Every truck and truck tractor shall have installed two rear vision mirrors, one at each side, firmly attached and so located as to reflect to the driver a view of the highway to the rear along both sides of the vehicle. Mirrors must not be cracked or dirty. *(M.C.S.R.)*

Item 7, HIGHWAY WARNING EQUIPMENT — This equipment must include either three red electric lanterns in operating condition and two red flags or three red emergency reflectors and two red flags with standards adequate to maintain them in an upright position, or three red emergency reflective triangles or three bidirectional emergency reflective triangles. Flame producing equipment is prohibited. *(M.C.S.R.)*

Item 8, FULL FIRE EXTINGUISHER INSTALLED — Inspect to see that one full fire extinguisher having an Underwriters' Laboratories rating of 10 B:C or more is securely mounted and readily accessible. *(M.C.S.R.)*

Item 9, LIGHTS AND REFLECTORS OPERATIVE — (Head-Stop-Tail-Front and Rear Clearance) — Inspect all lights and switches, including clearance lights and turn signals; make sure they are not obscured by dirt or grease or have broken lens; high and low beam switch must be operative. EMERGENCY flashers operating on front and rear of vehicle. *(M.C.S.R.)*

Item 10, EXHAUST SYSTEM — Inspect the exhaust system to see that no part is so located as would be likely to result in burning, charring, or damaging the electrical wiring, the fuel supply, or any combustible part of the vehicle. The exhaust system shall discharge to the atmosphere at a location to the rear of the cab or, if the exhaust projects above the cab, at a location near the rear of the cab. *(M.C.S.R.)*

Item 11, LIQUID PETROLEUM GAS POWERED VEHICLES — Inspect LPG burning system to insure compliance with DOT standards prescribed in 49 CFR 393.69. *(M.C.S.R.)*

Item 12, FUEL TANK, LINE, AND INLET — Inspect tanks and fuel lines to see that they are in completely serviceable condition, free from leaks or evidence of leakage and surely mounted. Examine caps for defective gaskets or plugged vents. Inspect the filler necks to see that they are in completely serviceable condition, securely supported and not leaking at joints. *(M.C.S.R.)*

Item 13, COUPLING DEVICES - KINGPIN LOCK — Inspect without uncoupling to see that the fifth wheel rocker plate and bed are in good condition, properly assembled and mounted, and adequately lubricated. Kingpin lock must operate freely and properly, lock securely, and not show excessive wear. *(M.C.S.R.)*

Item 14, ALL BRAKES OPERATIVE — (Including hand brakes and air pressure warning devices) — Inspect for oil or grease leaks around drum flanges, pedal travel, air or vacuum line leaks, moisture in tanks, compressor build up and governor cut off. Test for proper and adequate brake application. *(M.C.S.R.)*

Item 15, LANDING GEAR ASSEMBLY OPERATIVE — Landing gear assembly must be in good condition, correctly assembled, adequately lubricated, and properly mounted.

Item 16, SPRINGS AND ASSOCIATED PARTS — Examine visually the springs, suspension hanger mechanisms, torsion bar assemblies, and auxiliary parts such as U-bolts, shackles, center bolts and hangers, for breakage, improper adjustment, and, as appropriate, lack of lubrication. Air suspensions should not be leaking. *(DOD Requirement)*

Item 17, TIRES — Examine all tires for cuts, bruises, breaks, and blisters. All tires with cuts or injuries extending into the cord body and those worn smooth in the center of the tread are not acceptable. Insure that stones are removed from between duals. Tires must be properly matched on dual-equipped tractors and trailers. *(M.C.S.R.)*

Item 18, CARGO SPACE — Inspect to see that cargo space is clean and in good condition to prevent damage to lading from exposed bolts, nuts, screws, nails, or other inwardly projecting parts. Check floor to make sure it is tight and free of holes. Floors shall not be permeated with oil or gasoline. *(C.F.R.)*

Item 19, ELECTRIC WIRING — Electric wiring must be clean and properly secured, insulation must not be frayed or otherwise in poor condition. There must be no uninsulated wires or improper splices or connections. Wires and electric fixtures inside the body must be protected from the lading. *(M.C.S.R.)*

Item 20, TAILGATE AND DOORS ON CLOSED EQUIPMENT SECURED — Inspect to see that all hinges are tight in body. Check for broken latches and safety chains. Doors must close securely. *(M.C.S.R.)*

Item 21, FIRE AND WATER RESISTANT TARPAULIN — If shipment is made on open equipment, check to make sure the lading is properly covered with a fire and water resistant tarpaulin. Explosive material packed in fire and water resistant containers and transported on flat-bed vehicles are not required to be covered with fire and water resistant tarpaulins. *(C.F.R.)*

Item 22, ANY OTHER DEFECTS (Specify) — Self Explanatory.

Item 23, MIXTURES OF MATERIAL PROHIBITED BY DOT REGS. ARE NOT LOADED ONTO THIS VEHICLE — Check carefully to prevent loading of incompatible explosives. *(C.F.R.)*

Item 24, LOAD IS SECURED TO PREVENT MOVEMENT — Self Explanatory.

Item 25, WEIGHT IS PROPERLY DISTRIBUTED AND VEHICLE IS NOT OVERLOADED — Lading shall be distributed in accordance with the approved load plan, when available, or when not available, a plan agreed upon by the shipper and the carrier. The weight of the load shall not exceed the capacity of the vehicle established by the carrier. The gross axle weights and the gross vehicle weight shall not exceed the limits imposed by the states through which the vehicle is routed. The carrier shall inform the shipper of the state(s) law requirements. *(DOD Requirement)*

Item 26, 27, and 28 — Self Explanatory.

Item 29, PROPER PLACARDS APPLIED — Four standard placards applicable to the load will be furnished the carrier and insure they are conspicuously displayed, one in front, rear, and each side. *(C.F.R.)*

Item 30, SHIPMENT MADE UNDER DOT EXCEPTION 868 — This item will be checked when a shipment is made under the provisions of DOT Exception 868. When checked, it signifies that the shipment was loaded in compliance with carrier's advice on maximum weight and that the driver is relieved from certifying to Items 23, 24, and 25. *(DOD Requirement)*

REMARKS

☆ U.S. GOVERNMENT PRINTING OFFICE: 1978-264-936

FIGURE 19-2. Example of DD Form 626 (Continued).

- Keep personnel clear of loads being lifted by terminal or marshaling yard equipment.
- Keep roadways and marshaling yard aisles in good repair to minimize the danger of toppling container-bearing transporters.

TRANSPORTING DANGEROUS/ HAZARDOUS CARGO

In addition to the rules that apply to general cargo, these general rules apply to most dangerous/hazardous cargo:

- Inspect vehicles that carry dangerous/ hazardous cargo according to DD Form 626. The inspector checks to see that the vehicle can be operated safely and is free of grease accumulations that can cause a fire.
- Once the vehicle passes inspection, attach the proper placards to the vehicle front, rear, and sides to identify its cargo (Figure 19-3). (Use bilingual placards when outside of CONUS.)
- When loading and unloading, the driver must –
  - Set the vehicle's brakes.
  - Chock at least one wheel if the vehicle is on a grade.
  - Chock the semitrailer when separated from the tractor.
  - Turn off the vehicle's motor unless it is providing power to the vehicle accessories used to load or unload.
  - Keep smokers 50 feet or more away from the vehicle.
- When driving with dangerous/hazardous cargo, keep a safe distance from the other traffic. Avoid sudden stops and turns. Do not smoke inside the vehicle. Do not enter tunnels or park overnight in populated areas.

Unless there is no practicable alternative, a motor vehicle which contains hazardous materials must be operated over routes which do not go through or near heavily populated areas, places where crowds are assembled, tunnels, narrow streets, or alleys. Operating convenience does not determine the practicability to operate a motor vehicle according to this paragraph. This paragraph does not apply to radioactive materials.

Except as provided below, the driver or another individual qualified to operate the vehicle must attend a motor vehicle which contains Class A or B explosives at all times. The driver of a motor vehicle which contains hazardous materials other than Class A or B explosives and which is located on a public street or highway must attend it. However, the

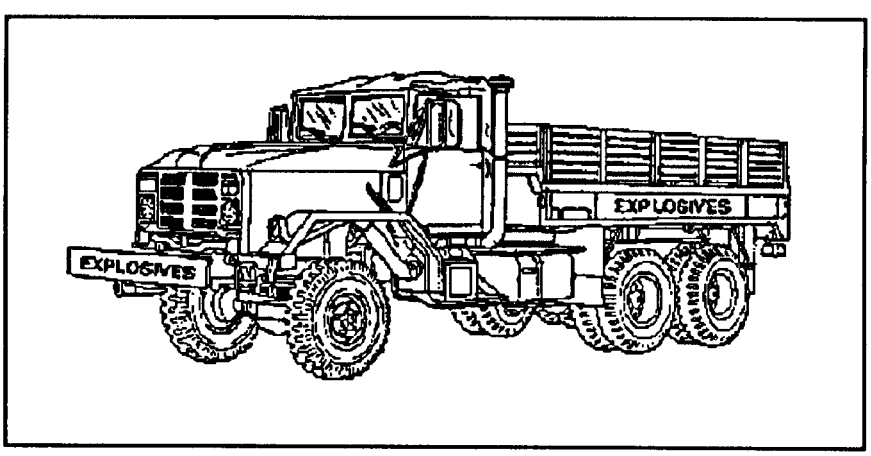

FIGURE 19-3. Placarding a Vehicle.

vehicle need not be attended while its driver is performing duties which are incident and necessary to to his duties as the operator of the vehicle.

For purposes of this section –

- A motor vehicle is attended when the person in charge of it is awake in it (not in the sleeper berth) or is within 100 feet of it and has an unobstructed field of view of it.
- A qualified representative of the unit is a person who meets all these criteria
  - The unit has designated him to attend the vehicle.
  - He is aware of the nature of the hazardous materials contained in the vehicle.
  - He has been instructed on the procedures to follow in emergencies.
  - He is authorized and has the ability to move the vehicle.
- A safe haven is an area specifially approved in writing by local, state, or federal governmental authorities for the parking of unattended vehicles containing Class A or B explosives.

These rules do not relieve a driver from any legal obligation relating to placing warning devices when a motor vehicle is stopped on a public street or highway. A motor vehicle which contains Class A or B explosives must not be parked under any of these circumstances:

- On or within 5 feet of the traveled portion of a public street or highway.
- On private property (including premises of a fueling or eating facility) without the knowledge and consent of the person who is in charge of the property and who is aware of the nature of the hazardous materials the vehicle contains.
- Within 300 feet of a bridge, tunnel, dwelling, building or place where people work, congregate, or assemble except for brief periods when the necessities of operation require the vehicle to be parked and make it impracticable to park the vehicle in any other place.

A motor vehicle which contains hazardous materials other than Class A or B explosives must not be parked on or within 5 feet of the traveled portion of public streets or highways except for brief periods when the necessities of operation require the vehicle to be parked and make it impracticable to park the vehicle in any other place.

These rules do not apply to motor vehicles which contain Class A or B explosives if all the following conditions exist:

- The vehicle is located in the unit motor pool, on the property of the shipper or consignee of the explosives, in a safe haven, or in the case of a vehicle containing 50 pounds of either Class A or B explosives, on a construction or survey site.
- The responsible individual of the explosives is aware of the nature of the explosives the vehicle contains and has been instructed on the procedures to follow in emergencies.
- The vehicle is within the responsible individual's unobstructed field of view or is located in a safe haven.

Missiles

Missiles are very different from most items the Army transports because they can be at the same time overweight, sensitive, and flammable. These complex characteristics call for special loading procedures. In fact, the procedures are so special that the Army publishes detailed loading and bracing drawings for each missile system.

Ammunition and Explosives

Army motor vehicles often transport ammunition and explosives. Although safety is always important, it is especially so when the cargo itself is dangerous.

A vehicle carrying explosives must be equipped with two fully charged dry chemical fire extinguishers. One of them must be mounted on the outside of the cab on the driver's side; the other mounted inside the cab.

> **NOTE:** All fire extinguisher's must be inspected monthly to make sure they have not been damaged and the hose nozzles are not clogged. The inspection date and the initials

or name of the inspector must be recorded on a tag; the tag must be attached to the extinguisher. Another tag, indicating the date of the last weight-test, must also be attached to the extinguisher. Obtain instructions on these procedures from your local or military fire station.

Block and brace the load well to prevent its shifting during travel. Drawings of approved methods of blocking and bracing are available from the US Army Ammunition Procurement and Supply Agency. Refer to FM 55-17 before loading, blocking, or bracing any ammunition or explosive load. Be sure that detonating caps for such explosives as dynamite are not carried in the same vehicle as the explosives. While loading or unloading, handle explosives with care.

CAUTION

The truck's tailboard or tailgate must be closed and secured to be sure all ammunition or explosives stay inside the cargo compartment.

Chemical Agents

Federal agencies govern and regulate the transport of hazardous chemicals and related items within the United States. A brief summary of the regulations and safety standards to be used to load and unload this kind of cargo follows.

The Vehicle. The cargo compartment of the vehicle must be a closed body or one covered with a fire resistant tarpaulin. The vehicle must be equipped with red lanterns, red reflectors, red cloths, and two fire extinguishers for use in emergencies.

Loading and Unloading Safely. In addition to those precautions already explained, load containers with valves or fittings so damage to valves or fittings during transit is prevented. Vehicles, once unloaded, should be swept clean. The sides and floors should be tested for contamination and decontaminated if necessary.

Driver Instructions. Each driver of a motor vehicle transporting dangerous chemicals must be given full and complete information about the shipment to help him safely deliver the cargo to its destination. When the vehicle is loaded, the driver is informed of necessary safety precautions verbally and in writing, using DD Form 836.

Liquid Fuels

When carrying gasoline or other liquid fuels, you need two fully charged fire extinguishers. (The same as for ammunition.)

Inspect gasoline cans for leaks. Do not let defective cans be loaded. Keep all gasoline cans, full or empty, tightly closed. When hauling gasoline in a cargo truck, remove tarpaulins unless otherwise instructed. If you must use tarpaulins, carefully air and dry them before they are folded and stored.

TRANSPORTING HAZARDOUS MATERIALS BY HIGHWAY

Because the transportation of ammunition, explosives, flammables, chemical agents, and radioactive materials is dangerous, it is essential that personnel involved know and observe applicable safety regulations.

A vehicle transporting Class A or B ammunition, explosives, or other hazardous material is inspected at—

- The origin of shipment. At this time deficiencies are corrected before the transporter enters a sensitive area.
- At trailer transfer points (when prime movers are exchanged).
- At destination, before delivery is accepted.

In CONUS, the shipper uses DD Form 626 as a guide to and record of the inspection. In an overseas theater, DD Form 626 (modified appropriately) may be used or may serve as a model for a locally produced inspection form.

In CONUS, military shippers use DD Form 836 to instruct drivers of military and commercial vehicles transporting dangerous material. Sections of the form outline actions to be taken in case of fire, accident, and breakdown and provide for entry of specific information by the shipper or transportation officer. This form (appropriately modified) may

also be used in an overseas theater or may serve as a model for a locally produced instruction form. The driver must have shipping papers available at all times. (See CFR 49 177.817.)

In CONUS, military vehicles transporting ammunition, flammable materials, or toxic chemicals must comply with DOT regulations governing highway movement of these materials. In an overseas theater, such movement must comply with theater policies and host-nation requirements.

Follow these general safety guidelines for motor transport of ammunition and explosives:

- To prevent accidental movement of the transporter while it is being loaded or unloaded, stop the engine, place the vehicle in gear, and set the parking brake and block the wheels.
- Handle the explosives with care. Do not jar or shock them.
- Prohibit smoking within 50 feet of a transporter loaded with explosive or flammable liquids. (The driver will not smoke during transport.)
- Prohibit open flames, such as matches, cigarette lighters, and torches, within 100 feet of a transporter loaded with explosives or flammable liquids.
- Each truck hauling explosives or flammables must have two dry chemical fire extinguishers, one inside the truck cab and one outside on the driver's side. Be sure drivers know how to check the serviceability of the extinguishers and how to use them.
- Vehicles will be driven at a safe distance from other traffic. Caution drivers against sudden stops or turns.
- Clearly label or placard vehicles to warn other traffic.

During highway movement of chemical agents, hazardous chemicals, and chemical ammunition, the driver should have a protective mask, protective clothing, and appropriate protective and first aid items, such as burn ointment, as necessary.

The driver must know the hazardous nature of his cargo, such as symptoms produced by toxic chemical agents and action to take in case of fire, spillage, or other emergency.

DETECTING FUEL LEAKAGE OCCURRING ON A PUBLIC HIGHWAY

Immediately upon detecting a leak in the cargo tank–

- Turn off the vehicle's electrical system. Extinguish any cigarettes or open flames in the vicinity. Remove the vehicle's fire extinguisher from its bracket and keep it close at hand If an assistant driver or other person is available, tell him to man the fire extinguisher.
- Notify police of the hazardous situation by the most expeditious means.
- Inspect the leak. Determine if a field expedient, for example, a wooden plug or rubber matting, can be used to control the leak.
- Place highway warning devices at prescribed locations. Do not use flares.
- Keep spectators away from areas where flammable liquids are spilled or toxic fumes have accumulated.
- Guard against smoking by spectators or passing motorists. If personnel are available, post guards to warn passing vehicle drivers of the fire hazard
- Notify nearby residents when spillage may place them in danger.

When civilian police and/or fire fighting personnel arrive, tell them the nature of the cargo. Follow instructions issued by fire or police department personnel until the hazard is neutralized. Military personnel will inform civilian investigators and cooperate with civilian authorities in clearing the damaged equipment from the highway.

DETECTING FUEL LEAKAGE OCCURRING OFF THE ROAD

Emergency Procedures

Immediately upon detecting a leak in the cargo tank –

- Turn off the vehicle's electrical system. Extinguish all sources of ignition in the area.
- If the tanker is a semitrailer, lower the landing legs, disconnect the semitrailer from the tractor, and drive the tractor a safe distance from the semitrailer.
- Remove the vehicle fire extinguisher from its bracket and keep it close at hand If an assistant driver or other person is available, tell him to man the fire extinguisher.
- Inspect the leak. Determine if a field expedient, for example, a wooden plug or rubber matting, can be used to control the leak.
- If space is available in another compartment of the tanker, transfer the fuel from the leaking compartment to the secure one. However, this procedure is not recommended when fumes have accumulated around the tanker pump.

Fuel Transfer

When other fuel-transporting vehicles are available and not filled to capacity, you may transfer fuel from the leaking compartment to their cargo compartments. When this method is used, use only the pump on the secure vehicle and separate the vehicles the maximum distance allowed by the available hose.

Fuel Jettisoning

When fuel cannot be transferred from the leaking compartment, contact your nearest hazardous material protection facility (local fire station) for permission to locate a proper location to jettison fuel.

CAUTION

Army, Department of Defense, and federal regulations prohibit routine discharge of

USING SAFETY PROCEDURES

If you use petroleum tank vehicles, know and observe the safety precautions in this section and those in the chapters dealing with specific vehicles and operations. These procedures apply to all the vehicles in this manual. When refueling aircraft, however, follow the additional instructions in FM 10-68.

Whenever you operate a tank vehicle or transfer a product, follow these safety procedures:

- Position the tank vehicle in the transfer area so that it is headed toward the nearest exit and away from buildings or other obstructions. Do not let other vehicles block exit routes.
- When possible, conduct petroleum operations on level ground Always stop the engine and set the brakes. If you are on a grade, chock the wheels.
- Keep at least 25 feet between the tank vehicles during receipt and issue operations. To avoid congestion during transfers to other vehicles, maintain a distance of 100 feet between the tank vehicles engaged in transfer operations. Also, be sure you have a clear escape route when the tank vehicles are parked overnight in the designated parking area.
- During all loading, unloading, and fuel-servicing operations, keep the tractor coupled to the tank semitrailer. However, if the semitrailer is used for temporary storage, you may keep it uncoupled from the tractor.
- Keep the manhole cover open during all loading, unloading, and fuel-servicing operations. Do this so the tank shell does not collapse if a vent fails. When opening the manhole cover, stand on the windward side of the vehicle.

- When transferring a product, the driver of the receiving vehicle operates the dispensing nozzle of the discharge hose. By doing this, the driver can top off his own vehicle at the proper level.
- When the transfer operation is completed, carry the nozzle and the discharge hose back to the fuel tank vehicle. Do not drag it on the ground
- Keep the canvas top and rear curtain of the tractor in place whenever the vehicle is carrying, loading, or unloading a product. The top and curtain keep the tractor from being splashed with fuel from the vehicle catwalks.
- Check the pressure vacuum relief valves frequently in cold weather to be sure they are operating properly.

Fire Prevention

Aside from enemy attack, fire is the greatest danger during fuel tank vehicle operations. To prevent fires –

- Post NO SMOKING signs around the area of operation. Observe no smoking rules. Do not let anyone carry matches or lighters when working around a fuel tank vehicle.
- Keep a dry chemical fire extinguisher manned and ready for use during all petroleum tank vehicle operations. At permanent fueling installations, build a covered storage point in which a carbon dioxide, foam, or dry chemical fire extinguisher and sand may be kept. Keep this storage point close to the loading and unloading area. Inspect all fire extinguishers at this storage point monthly to be sure they have not been damaged and the hose nozzles are not clogged. Record the inspection date and the initials or name of the inspector on a tag; attach the tag to the extinguisher.
- Bond and ground all vehicles and equipment before you start any petroleum tank vehicle operation.
- Stop all petroleum operations if there is an enemy attack, electrical storm, or a fire in the area.
- Keep all possible sources of vapor ignition away during fuel tank vehicle operations.
- Be sure the drop tube or discharge hose is close to the bottom of the tank during top loading. This cuts down on vapors and static electricity. When top loading jet fuel, start pumping at a reduced flow rate until the lower end of the drop tube or discharge hose is covered with the product.
- Use explosion-proof extension lights, flashlights, and electric lanterns. Be sure all electrical equipment used is explosion-proof and in good operating condition.
- Do not drag hoses across the rear decks of combat vehicles or near their exhaust systems. Armor plates and exhaust pipes get hot during operation, could damage hoses, and could cause a fire.
- Do not drive past or near a fire until it is safe to do so.
- Stop the flow of fuel and close the manhole cover if a fire is in a tank compartment.
- Wash immediately with soap and water if you get fuel on your skin.
- Wet fuel-soaked clothes with water and remove them immediately. If you do not have any water, temporarily ground yourself by holding a piece of grounded equipment with both hands. Then remove your hands from grounded equipment and take off your clothes. This grounding action removes the danger of a static spark igniting your clothes.

Bonding and Grounding

Bonding is the process of electrically connecting two units to equalize any static potential that might exist between them. Bonding also forms a path for any static potential that might develop while the operation is in progress.

Grounding is the process of electrically connecting single or bonded units to ground rods so that any static potential that might exist at the beginning of

the operation or that might develop during the operation, is discharged into the earth.

Always bond and ground both vehicles and equipment before you start petroleum operations. To do this, first ground the tank vehicle and the other unit involved to the ground rod. If you use only one ground rod to do this, you do not need to bond If you use two rods, bond the tank vehicle to the other unit by running a cable between them. Then touch the hose, drop tube, or discharge nozzle to fill the cap before you remove it. During the operation, keep the nozzle in contact with the fill opening at all times. When the operation is completed, close the fill cover before disconnecting the bonding and grounding cables.

Spill Control

Fuel spills or overflows at tank vehicle receipt and issue points can pollute the soil, create a fire hazard, and cause a loss of fuel. To prevent spills or overflows —

- Gauge both the receiving tank and the tank vehicle before and after a transfer. When traveling cross-country, use a gauge stick to measure the amount of product in the tank compartment.
- Attend all discharge nozzles or loading arms constantly while refueling. Also do not use nozzles with notched handles. If you find a nozzle with a notched handle, modify-it so the handle cannot be held open in the locked position.
- Do not exceed safe refueling rates. Also, top off all containers at a reduced flow rate and fill containers only to prescribed levels. At the completion of every operation, drain all hose sections into an appropriate container.
- Keep nozzles, hoses, or drop tubes inside containers to avoid spray.
- Try to keep the product from entering streams or sewers except as directed by police or fire department personnel.
- Fill drums and cans on the ground or on a ground rack.
- Use the pressure control when filling a 500-gallon collapsible drum. If you do not have a pressure control or meter, leave a 1 1/2-inch depression in the top of the drum to allow for product expansion. Whenever the drums are air-lifted, you MUST use the pressure control.
- Park loaded bulk petroleum transporting vehicles under shade whenever possible. Heat from the sun will cause the POL to expand. If natural cover is not available, use a camouflage screen system to shade the tanker.